

THE TECHNOLOGY REVIEW

RELATING TO THE MASSA-
CHUSETTS INSTITUTE
OF TECHNOLOGY



PUBLISHED AT
491 BOYLSTON STREET BOSTON BY THE
ALUMNI ASSOCIATION

Entered as second-class mail matter
at Boston Post-Office.

MONTHLY NUMBER

Monthly, except August, September
and October.

Price 10 cents—Subscription Price \$1.50

technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.

ANNUAL BANQUET
OF THE
ALUMNI ASSOCIATION, M. I. T.

HOTEL SOMERSET, BOSTON
SATURDAY EVENING, JANUARY 9, 1915
AT 7 O'CLOCK P. M.

Notice and program will be sent out late in December

GRAND RALLY IN PITTSBURGH

TECHNOLOGY CLUBS ASSOCIATED



THE TECHNOLOGY CLUBS ASSOCIATED
WILL MEET IN PITTSBURGH, FEBRUARY
19 AND 20, 1915. SPECIAL CARS WILL BE
RUN FROM CHICAGO, CLEVELAND, PHIL-
ADELPHIA, NEW YORK, AND BOSTON



SEE DETAILS LATER

The Technology Review

VOL. XVI

DECEMBER, 1914

No. 9

BUSINESS ENACTED BY THE COUNCIL

Committee on Coöperative Society reports in favor of Combining with the Harvard Coöperative Society—Record of attendance of Council Members discussed

The two principal topics of the Council meeting held November 23, were the Technology Coöperative Society and the personnel and the activities of the Council itself.

Two of the new professors from Harvard, who have become identified with Technology were present, Professors Peters of the mining department, and Adams of the electrical engineering department. Dr. Dewey was also present to speak of the new course in engineering administration.

President Whiting said that at the last meeting of the Council the speakers had suggested that the matter of furthering coöperation between Harvard and Technology Alumni should be placed in the hands of a committee. A motion was made to that effect, and he had appointed as members of that Committee Charles A. Stone, '88, Odin Roberts, '89, both of Boston, and William H. King, '94, of New York.

Secretary Humphreys, who had been attending a conference of the Association of Alumni Secretaries at New York, representing Technology, made a report of the meeting, which is mentioned elsewhere in the REVIEW.

Mr. Whiting made the statement that

the Chinese students of Technology had asked for an advisory council of three alumni to whom the Chinese students could go for advice when it should become necessary. The president appointed A. F. Bemis, '93, and Henry Morss, '93, to serve with him, on this committee, as it was to be an informal one and for the present would not be considered as a function of the Alumni Association.

The report of the Committee on the Technology Coöperative Society was then read. The matter of the coöperative society has been the subject of investigation by the Institute Committee for some time, and at a previous meeting the students made a report on the society, asking that the alumni take the matter up further and give their advice as to what steps should be taken. A committee was appointed consisting of Leonard C. Wason, '91, chairman; Horace S. Ford, bursar, M.I.T.; Charles W. Eaton, '85; A. D. MacLachlan, '96; Elmer E. Dawson, Jr., '14. It is a rather long report to be printed in full here, but important excerpts are presented which indicate the wisdom of joining with the Harvard Coöperative Society and having a branch establishment outside of the college grounds but convenient to the buildings.

Following the March meeting of the Council, this committee was appointed on April 2, and held its first meeting April 6, with all present. It has held several other meetings since. The report of the committee on M.I.T. Coöperative Society reorganization of the undergraduates which was presented to the Council at its March meeting was discussed. It was decided to investigate all college coöperative societies and any commercial coöperative societies available, also the attitude of the student body toward the M.I.T. Coöperative Society, before determining upon any final line of action. A history of the M.I.T. Coöperative Society from its beginning was prepared by A. D. MacLachlan. It is too long for a complete presentation at the present time. A synopsis of it, however, is as follows:

The M.I.T. Coöperative Society was organized in the spring of 1886 by three members of the class of '87, at which time a constitution was adopted and a list of affiliated tradesmen was printed. In December, 1886, a book exchange was established which still continues. In '87 a fee was fixed of fifty cents per annum for membership, the proceeds to go to a scholarship fund. In November, 1889, the society started a lunch room which later it turned over to the Faculty, who have since operated it. In the spring of '94 it started an employment bureau to find vacation work for students. This work is now done by the Dean. In 1895 began the sale of books and drawing materials at the opening of the fall term in one of the Institute buildings, and as an outgrowth in 1897 it established a supply room in the Engineering building and another in the Architectural building, which have been continued to the present time. For the last few years no change has been made in the line of activity taken. A review of considerable length of the relations of Mr. MacLachlan, who has been for many years the society's treasurer, with the society is given.

From all the colleges of the United States, a list of fifty-three which, on account of size or other feature were sufficiently similar to Technology to make a comparison useful, was selected. A series of thirty-five questions was arranged and sent out, classified as to organization, government, merchandise, operation, financial, etc., forty-one replies were received. Twenty-nine colleges had no coöperative society. Three replies were without sufficient detail and nine replies were classified as given in an appendix, to which is attached in the same form a statement of Harvard, which was not included in the letter of inquiry, because a personal investigation was made due to its importance and easy access. These were largely run on a similar basis but not so well or on so large a scale as the Harvard society, which will be described more in detail. Printed financial statements and constitutions and by-laws were submitted in all cases but one.

In addition to the very interesting data to be found in the annual report and by-laws of the Harvard Coöperative Society, the following facts, gleaned from analysis of the figures and by interviews with Prof. Munro, president of the society, may be of interest. With the exception that no dividend is paid on the capital invested but instead most of the net earnings are returned to such of the customers as are ticket holders and record them-

selves for a dividend, the society is conducted as a regular commercial business. It has a main and branch store near the university in Harvard square, at which a majority of the articles needed by a student during his college year are offered for sale. The gross profit was \$80,107 and the gross sales were \$418,774, making the gross profit on sales 19.1 per cent. During the year dividends amounting to \$19,443 were paid to 3,037 members, or an average dividend of \$6.48; while the highest dividend paid to any member was \$107.64. The average sales to members was estimated at \$80. The amount of sales recorded for dividend is slightly over 50 per cent. of the total sales, which shows that the members are either not habitually recording themselves for dividends or else there are very large sales to non-members who find that the store is a desirable place to trade. It is said that 95 per cent. of the students buy their books and stationery at the Coöp. Four thousand two hundred and seventy-nine students multiplied by 95 per cent. equals 4,065.

It was significant in the report of the society that the largest number of members were from the freshman class and decreased regularly to the senior class. The same is true of the Tech society.

The merit of granting discount at time of sale or deferred dividend was discussed. The immediate discount would save some expense in bookkeeping, but as the amount of each sale is small the amount saved to a customer would be so small as to be easily forgotten and at the end of a year the student would feel that he had received no benefit, whereas giving a lump sum at some convenient time to him, would seem a much larger sum and make him feel that the coöperative society was doing something for him. Another reason is that 76 per cent. of their business was done on credit; therefore, dividends would have to be deferred in any case until the end of the month, when accounts are sent out. On the other hand, there would be a better feeling with local competing stores if prices were maintained. Also, on certain goods like Waterman pens, which are required to be sold at a fixed price, a discount at sale would not be allowed, as it would be virtually cutting the price. On many other goods, such as kodak supplies, proprietary, toilet articles and 20 per cent. of the stationery department business, there are complications in a similar way to giving immediate discount, and it is found in the long run to be best to pay a dividend annually. Competition with other stores is beneficial, or at least has done no harm. There has been little overlapping of the business conducted by other stores, and the Harvard Coöp has given so much better service than its neighbors that it is drawing trade solely on the ground of service rendered. Part of this service is free delivery of merchandise. They have one double and three single delivery teams, besides a laundry wagon. The cost of delivery averages about 1½ per cent. on gross sales. This may work a disadvantage to some members and to the benefit of others, but the service is open to all customers.

There are eighty-six regular employees. This is a sufficient number to handle the peak of all loads except that at the opening of the fall term. During the first two weeks of the fall term 25 per cent. of

the year's business is done. There is another peak of less magnitude during the Christmas holidays, one at the opening of the second term, and one in the spring of the year. The same number of employees is carried through the summer as in the winter, although the volume of sales in summer is quite small and the society runs at a loss from July 10 to September 10. During this period all vacations are taken, also inventories, and to keep the force employed such mail order business as can be obtained is carried on. During the past year the society took for summer work the furnishing of the freshman dormitories, the actual labor of unpacking furniture and setting it up in the rooms being done by the clerks who would otherwise have been idle at the main store.

The society has an elaborate system of merchandise control prepared monthly showing the amount of supplies that should be bought monthly to meet the expected trade, and the amount of stock to be kept on hand, and the results obtained from each department are compared with the budget regularly and all discrepancies are investigated, so there is now little danger of overstocking of goods which in time become unsalable. They also make out in great detail an expense budget which is submitted to the board of directors annually. The budget made out in July, 1913, amounted to \$62,000 and the annual expense came within \$300 of the appropriation.

Salaries range from \$8 per week upwards to \$2,600 per annum; while two others receive \$2,500 per annum.

Due to large capital and large business done by the society many books can be bought at considerable discount by getting entire editions of a thousand books, leaving it to the publisher to put these through at his own convenience and within certain limits of materials used. The same is true on large purchases of paper, which makes savings not possible on small purchases or with limited credit.

In the early days of the society, the management was in the hands of the undergraduates more than at present. This was found to be unsatisfactory, due to the frequent change of undergraduates, their lack of experience, and the fact that this was not their prime reason for attending college, and their studies did and should take precedence over outside activities. Therefore, today the real management is entirely in the hands of the college authorities, whose policy is continuous, with a minority of representation of undergraduates on the board of directors.

The attitude of the student body toward the coöperative society was investigated, and can be summed up as follows: Men of moderate means residing in the suburbs were not interested in the competitive articles which the Coöperative carried in common with other stores, as the tradesmen's list would not include the stores at which they wished to make their purchases and there was no saving on the big items, such as books, and after their first year, when there was some saving in drawing materials, they found it of no use and dropped out. These men and also those of moderate means from a distance would buy their supplies at January bargain sales and get second-hand books through the exchange, and therefore found little benefit

from the society. To men in the various Institute activities, the society seemed so dead that there was no incentive to be a member. There is so little publicity given to the Coöperative that many of the freshmen did not know of the society; while many just heard that such a thing existed. There was also found to be a considerable feeling of antagonism toward the society with many students because of the high price of certain technical books, and Institute and professors' notes, which are printed in small editions and necessarily sell at very high prices. Through lack of proper information they believed that the coöperative society charged an unnecessarily high price and was making an exorbitant profit at their expense.

An independent Technology Coöperative Society, to be most useful, should be organized on similar lines to that at Harvard. It should have a store with permanent clerks, carry a sufficient supply of all goods that may be needed quickly by students, especially such as are sold in small quantities, while an affiliated list of dealers in various goods should be maintained where articles, purchased in such large quantities as to justify the student to take the time to make a trip to a more distant point, could be bought.

After the Institute buildings in Cambridge on the Charles River are occupied, there will still be some use made of the buildings on Boylston street, so that a store could be maintained near either site with convenience to the student body, as it is probable that all the student body at some time during the week would have to visit each group of buildings. However, rents in the Back Bay are expensive and, as a majority of students will be in Cambridge most of the time, a site near the new location will be most desirable. President MacLaurin states that there will be no room to spare in the new group of buildings for a coöperative society store.

Moreover, it has been found undesirable from the experience at Harvard to have a store on college property. There are several suitable locations, some of which already have buildings containing stores, which might be obtained for a coöperative society. No definite price has been obtained on any store, but it was found that the present tenant of a nearby suitable store pays \$35 or \$40 a month. From the new site of Tech to Harvard square, Cambridge, by means of the subway, the minimum time is ten minutes, while the average is about thirteen minutes, and to Park street, Boston, the time is about two minutes less. Therefore, it would be equally convenient, so far as time is concerned, for a student to go either way to make purchases of articles not carried in the local store. If we draw upon the experience of the Harvard society to obtain figures for the volume of business done at a proposed Technology store, we would have figures somewhat as follows: Assume 2,000 students at the Institute in 1917, as 1,818 were registered in October, 1914, and that 95 per cent. of them bought \$35 worth of books and stationery during the year, the gross volume of sales would be \$66,500. If we assume that the student body, Faculty and local alumni made a possible 2,500 customers and that 60 per cent. of these were members of the society and bought on the average \$80 each per annum, the gross sales would be \$120,000. There might be

some sales to nearby residents, but it is improbable that the total sales of this store would exceed \$125,000 per annum. If we earn the same gross profit that Harvard did the last fiscal year, 19.1 per cent., the gross profit would be \$23,875, and if the gross expenses were no higher, 15½ per cent., or \$19,375, then the net profit which could be returned to members in the way of dividends would be \$4,500.

It is not at all likely that in the first few years, at least, until a store was well organized, with the right manager, and had fully developed its trade, that we could make as favorable a showing as Harvard. The estimate of capital required to carry on the above business is about as follows: The gross sales amounted to \$418,774.19, and the free cash capital to \$78,136.60, or 5.36 times the capital that was turned over during the year. The above free cash was obtained by subtracting the quick liabilities from the quick assets in their last financial statement. \$120,000 divided by 5.36 equals \$22,389, or say \$22,500 capital required to conduct this business.

The report here takes up the relation of the Technology Coöperative Society to the Bursar's Fund, and explains that there are in reality two bursar funds. In 1907 the Institute received a legacy of \$6,000, the income of which may be paid at the discretion of the bursar to needy students, subject to the approval of the President and treasurer of the Institute. This fund, however, is entirely independent of what is also called the Bursar's Fund, which has been maintained for the benefit of the students of small means who need temporary loans, the funds for which are provided by the coöperative society. The member gets a discount of 10 per cent. on all his purchases; beyond this there is considerable net profit, which is divided approximately between scholarships allotted by the Institute and the Bursar's Fund just mentioned. The committee believes that the coöperative society should not be a philanthropy but a business proposition, and that none of the money from the coöperative society should be used for this purpose. It is recommended that the net profit of the present coöperative society be turned over to members as a deferred dividend, to be paid annually.

In its investigations the committee learned of the Dartmouth Educational Association, which has many excellent features. There is at the Institute means for carrying on similar work, but the

methods of the Dartmouth Association are recommended for study.

The Rogers' Scholarship Fund was raised by the alumni as a memorial to the founder of the Institute, and its purpose was to give aid to students for purposes other than tuition. The committee in its report recommends that the Council Committee on Permanent Funds consider the ways and means for enlarging the Rogers' fund, either by setting aside part of the fund each year or by interesting alumni to add subscriptions to it.

The report then continues as follows:

After due consideration of all coöperative societies and the situation at Tech, the final conclusion reached was that it would be for the best interest of Technology to make a working alliance with the Harvard Coöperative Society, which has all the resources and facilities and experience for conducting a branch store and which is willing to undertake the task, and it is felt that thereby the Institute will obtain the best results. You must not overlook the great service rendered for many years past to the present coöperative society by its treasurer, Mr. A. D. MacLachlan, who has a store on Boylston street, opposite the Institute buildings, and he will probably continue there after the Institute has moved. He would doubtless be on the list of affiliated tradesmen who give discount to Coöperative members. Referring to the figures given earlier, namely, that Mr. MacLachlan sold goods for a gross profit of 12.8 per cent. while Harvard sold for 17 per cent., and assuming, as is very probable, that he could buy his goods as cheap as Harvard could, it will be seen that he has been giving students a lower price for books than the Harvard Coöperative Society has offered.

We have suggested to the Harvard Coöperative Society that at the time a branch is opened at the New Technology on the Charles River bank in Cambridge, they modify the by-laws of their society so as to admit one director from the Faculty of the Institute, and if the business done at this branch exceeds \$75,000 in any one year to admit a second director for the ensuing year from among the members of the Alumni Association. These two members would be added to their present board of fourteen and be elected in the same manner as their own directors. It has also been suggested that members from Technology be admitted to the Harvard Coöperative Society without the advance payment of one dollar membership fee, but that this dollar may be deducted from any dividends due and payable to said member, and the change in the by-laws to meet these requirements is given below. This suggestion did not meet with the approval of the directors of the Harvard Coöperative Society and it was not pressed. It will be noted, however, that due to the existing alliance between Harvard and Technology, undergraduates, members of the Faculty and alumni are now eligible for membership on the payment of one dollar, on the same basis as Harvard men are now admitted.

To summarize the recommendations of the foregoing report, we recommend:

1. That the present Coöperative Society at the Institute be continued until the Institute has settled in Cambridge in its new site, just as it is now being conducted with the exception that all new dividends be returned to members instead of being applied to other purposes as in the past.
2. That an affiliation be made with the Harvard Coöperative Society along the lines previously suggested, to take effect when Technology is settled on the Charles River bank in Cambridge.
3. That the attention of the trustees of the Rogers' and Bursar's Funds be called to the successful organization and operation of the Dartmouth Educational Association with a view to so organizing their work as to increase its activity and usefulness.

The president introduced Bursar Ford, a member of the committee, who has been studying the various college coöperative societies. He said that although he had been predisposed to favor an independent Technology coöperative association, after going over the reports from fifty-three colleges and giving special attention to the business methods of the Harvard Coöperative Association, he was entirely converted to the idea of combining.

F. F. Fulton, '17, president of the Technology Coöperative Society, who was a member of the committee that presented the student report to the Council said that two investigating committees had been formed; one of them took the side of a combination with Harvard, and the other considered an independent organization. After consulting the alumni and going into the business features of the matter, they were unanimous in the feeling that the wisest course would be to coöperate with the Harvard society. He said that there had been a feeling among the students that there was some antagonism between Technology and Harvard men, and he thought that a combination of this kind would help to break down this feeling. He believed that the majority of undergraduates would agree that this arrangement is much to be desired.

M. B. Dalton, '15, president of the Institute Committee, thought that the recommendation of the committee was a good one and would be welcomed by the undergraduates generally. Incidentally he

spoke of the problems before the Institute Committee, the heaviest one being the matter of financing athletics, which had now been entirely turned over to the students. They found themselves facing the necessity of raising two thousand dollars for this purpose. A new standing committee of the Institute Committee, called the Budget Committee, was appointed. Part of the duties of this committee was to find out how much the different athletic sports can make, and another part was to apportion the funds to the athletic activities. The speaker said that they would try to make things come out ahead financially, but at least they would arrange it so that they could not spend more money than they had.

A. F. Bemis, '93, thought that if the Technology Coöperative Society can make a favorable arrangement, it would be the best possible solution of the problem.

A. D. MacLachlan, '96, treasurer of the Technology Coöperative Society, said that he had nothing to add to the comprehensive report. He was at first somewhat disappointed that instead of reorganizing, it had been decided to merge with the Harvard Society. He hoped, however, that the name of Technology would be incorporated in the name when it was located in Cambridge. He felt that after all, the suggestion of the committee was a very happy solution of a problem that has been vexing for a long time.

On the motion of Mr. Macy, '05, it was voted that the report in general be referred to the students of the coöperative society, and that that part concerning the recommendation of scholarships and the Dartmouth Educational Association be referred to the Committee on Permanent Funds, as they act as trustees of the Rogers' Scholarship funds.

The president then took up the matter that had been made a topic of discussion: Membership on the Council; its duties and responsibilities. He said that the personnel and activities of the Alumni Council determines the usefulness of that body, and he thought that the duties and responsibilities of members ought to be more closely defined. Some of the figures of attendance were rather startling; there

were a number of members that had not attended a single meeting. He also said that although it was understood that men representing local alumni associations should communicate with them after such meetings of the Council so as to keep a close touch between the Council and the local alumni associations, in many cases this had not been done. He called on the secretary, who had some statistics, to elaborate on them. Mr. Humphreys then hung up three charts as follows:

I. ATTENDANCE AT COUNCIL MEETINGS

Total meetings counted.....	34
Total members.....	169
<hr/>	
Present at 30 or more meetings.....	2
Present at 20 to 29 meetings.....	13
Present at 10 to 19 meetings.....	26
Present at 5 to 9 meetings.....	33
Present at less than 5 meetings.....	61
Present at no meetings.....	34

II. CLASSES ('68 to '09 inclusive) represented at:

		Totals
30 or more meetings.....	1	1
20 to 29 meetings.....	11	12
10 to 19 meetings.....	18	30
5 to 9 meetings.....	6	36
1 to 4 meetings.....	6	46
	42	

III. ATTENDANCE OF THE FIRST SIX MEETINGS IN 1914

Membership of council.....	98
----------------------------	----

		Totals
Present at 6 meetings.....	9	
Present at 5 meetings.....	9	18
Present at 4 meetings.....	13	31
Present at 3 meetings.....	17	48
Present at 2 meetings.....	15	63
Present at 1 meeting.....	17	80
Present at no meetings.....	18	
Members with 100 per cent. attendance	16	
(This includes 7 appointed after first meeting.)		
Average attendance at the six meetings.....	42	

President Whiting said that he thought election to the Council was a great honor and distinction. The question is: What shall we do to improve the personnel of the Council and increase the percentage of attendance?

F. H. Fay, '93, said that he thought the best way to do this was to keep on doing the good work that had been done this year. The attendance and interest in the Council was certainly increasing; much good work was being done by this

body and a great deal of it could be done by no one else. Many of the members come from long distances, and a number of them are busy men having many engagements. He thought that the Council was on the right track and hoped that the good work would continue.

Merton L. Emerson, '04, said that one could prove anything by statistics. There were two classes of men on the Council—those representing classes and those representing local associations. The former were chosen by the classes themselves while many of the latter had been appointed by the Council; perhaps in some places the appointments had not been wisely made. He thought that the class representatives' attendance would be better than the representatives of local associations. It would be a good idea, he said, to take some prompt action if a man showed by his non-attendance that he had little interest in the work of the Council.

Everett Morss, '85, said that in some organizations a man who was absent from three consecutive meetings was dropped. This was difficult to do in the case of the Council, because most of the members were elected. He thought that those appointed by the Executive Committee should lose their membership if they did not attend a reasonable number of times. In the case of lack of interest of a class representative, the matter could be taken up with his class. He said that he was a representative of a local association,—he hardly knew which one it was. He thought that it would be a good plan if the secretary of the association sent a report to the various local associations after such meetings.

Leonard C. Wason, '91, said that there were a great many men outside of the Council as active and as interested as the members of the Council. Absentees may not lack interest; some are situated so that they can attend these meetings better than others. He thought that before a man was elected to the Council he should answer the question: will you be able to attend a majority of the meetings of the Council?

Henry A. Morss, '93, said that he was

the representative of the Washington, D. C., society. He had written the secretary asking what they would like to have him do and he had heard nothing. Since then he had sent one or two reports without any response whatever.

Professor C. M. Spofford, '93, said that he had had the same experience and had some doubts as to whether or not the association he was supposed to represent, existed.

R. H. Howes, '03, of the Technology Club of New York, said that he had once had serious doubts about the usefulness of the Alumni Association, and when, after a meeting of the board of governors in New York a year or so ago, he had been told that he had been "sentenced to Boston," he did not know whether to ask for congratulation or commiseration. This, however, had been only his own individual opinion. W. H. King, '94, who had been a member of the Council, had told him that the membership consisted of a "bunch of live wires," and that he would enjoy attending the meetings. Up to that time he had an idea that the organization was created for the purpose of irritating the Corporation and that it was a very passive kind of body. His experience at the Council meetings was a great revelation to him. He said that the business was prepared and carried on in a very impressive way. He went back to the club and reported to the board of governors. His reports were written out and put on the bulletin board of the club, and he believed that he had it impressed upon the New York men that we have a serious and able Alumni Council. He believed that the Council should be advertised so that the public would know about it. He thought that the local associations should get reports through their representatives and that the classes should also get reports.

He announced that the New York club is to have its annual dinner on January 30. It is not really a club function but an all-Technology affair. Everybody is invited.

Allen H. Rogers, '90, representative of the Rocky Mountain Technology Club, stated that this was the first meeting he

had attended since his appointment. He said that he led such a nomadic existence that he did not know when he would be in Boston. He thought it would be hard for representatives of associations to make any kind of a report to their local associations. He said that these reports were found in the TECHNOLOGY REVIEW, which he thought was all-sufficient. In case the local associations have any views to present, they could send them on to the representative who could present them.

A. F. Bemis, '93, thought it would be a good plan to look over the work of the Institute and appoint a number of committees early in the year with the idea of arranging it so that every member of the Council would be a member of some committee. Committees of the Council had done wonderful work, and should do more of it. This should be largely deliberative. The greatest work is done between the meetings of the Council. If this plan is carried out, however, it should not be done to the detriment of the custom of appointing men outside of the Council for special work.

A. M. Hamblet, '02, representative of the Technology Club of Hawaii, said that sometimes the Council members are doing good work when they are not present. At a recent dinner in San Francisco, at which he was present, Leonard Metcalf, '92, made a very interesting speech, in which he gave a very good impression of the work being carried on by the Council.

John C. Chase, '74, representing the Technology Club of Southern California in Los Angeles, said that he had sent clippings from newspapers and other interesting matter to the secretary. He didn't hear from him, but he thought it was a good thing to let the association know that it was being represented.

A. T. Bradlee, '88, thought that the Council members should be present as much as possible, but he did not think it was necessary for the members to write to associations or to report to classes after such meetings. He thought that the REVIEW kept the readers fully posted on what is going on in the Council. He did not believe that the usefulness of a

member should be gauged by his attendance. Some of the men were very busy and unable to attend every meeting. There is, of course, no excuse for consecutive absences; such men should be labored with.

President Whiting then introduced Professor Peters, formerly of Harvard, who has joined the staff of the Institute in the department of mining engineering. Dr. Peters said that when he started to study mining in 1865 he did not know about the Institute and went to Freiburg, although the Institute was started that very year. He was convinced that if he had gone to the Institute he would have got more out of it than he did abroad. The contact with Professor Richards would have been a liberal education in itself. As an employer he valued Tech men very highly for their sense of responsibility. This was an important attribute, which, in times of stress, he had come to admire. He said that in coming to the Institute his own feelings, and those of the other professors he had talked with, were that they were coming, not to bring over any views of their own, but to build up on the excellent foundation already provided here and to cooperate with the Faculty of Technology. He was surprised at the work that busy men are putting into the matters taken up by the Council and felt that an institution must surely succeed with such a strong and able body to advise and support it.

Professor C. A. Adams of the electrical engineering department said that there had been very cordial relations between the electrical department of the Institute and the Harvard electrical engineering department for many years. To work in any cooperative way with the staff here would be not only a pleasure but an honor. He was speaking for himself as well as for others with whom he had talked, and who had expressed the same feelings as Dr. Peters. He said that the new men from Harvard had come, not only with the intention of cooperating fully, but with a hearty feeling of goodwill.

Dr. Dewey, head of the new course in

engineering administration, was then introduced. He said that the course was yet not quite in full swing. It began this year with the second-year students. The course is in the hands of a committee consisting of Professors Miller, Spofford, Jackson, Walker and Dewey. There are about fifty-five or sixty taking the course, and he said that among them there were some "reservists" and some "refugees," but that he believed that the "allies" would see that they did not lack employment. It required skill and wisdom to work out such a problem as this. "You can't establish a new course of this character" said Professor Dewey "without much experimenting and cautious procedure." An instructor of accounting had been appointed this year, but probably no other new appointments would be made until next year. He thought that it would take three years before the course would be in full swing.

Technology receives a Bequest

By the will of Caroline L. W. French, which was filed for probate last month, \$502,000 was distributed in public bequests, mostly to Boston institutions. Among these Technology is a beneficiary to the extent of \$100,000, the bequest being given in memory of the testator's father, Jonathan French. The Museum of Fine Arts is left \$100,000 in memory of her eldest brother, A. D. Weld French; \$100,000 goes to the Massachusetts General Hospital, in memory of her grandfather, John Davis Williams, and her mother, Hannah Weld Williams French. In addition to this a trust fund of \$100,000 is created and left in the hands of the executors for the benefit of four relatives and friends. Each of these is to receive a quarter of the net income, and upon their death it is to be turned over to the Institute of Technology and is to be known as the Jonathan French Fund.

A very attractive program is being arranged for the annual banquet of the Alumni Association, to be held at Hotel Somerset, January 9. Announcements will be mailed shortly.

New Courses Started

One of the students recently registered at the Massachusetts Institute of Technology is Captain V. E. Clark of Uniontown, Pa., who has joined the Institute for the benefit of the special post-graduate work on aërodynamics. Captain Clark is a graduate of Annapolis who has been transferred to the army and is attached to the Aviation Section of the Signal Corps. He has been for eight months at the flying school at San Diego and has become skilled in the management of aeroplanes. He has been up to the height of a mile or more, but as he explains it, not trying for altitude but purely in the regular work of flying, in which it is necessary to provide for volplaning to a suitable landing ground in case of trouble with the motors. This demands a good outlook over about six square miles, and a mile in height is desirable for safety in a wooded country where landing places may be distant one from the other.

On being asked the reason for coming to Tech, Captain Clark said frankly that there is no other college or institution in the country that is fitted for scientific investigation of practical matters in aërodynamics, so that the Institute is the only place where one can study such matters.

With reference to the status of flying in this country Captain Clark noted that the United States stands fourteenth in the world in aviation appropriations. The army is ready to do good work, but last year's appropriation was only about \$150,000 available for such expenditures, while Germany and France spent something like \$7,000,000 each.

The new course at Tech, which has been open only this term, is beginning auspiciously according to Lieutenant Hunsaker, who has charge of the instruction. Besides Captain Clark, M. S. Chow, one of the M. I. T. graduates in naval architecture is making the study of the subject leading to the degree master of science; three other Chinese are taking the work in their regular Institute courses and one senior in mechanical engineering is specializing in aërodynamics.

In the course in engineering administration, of which Professor D. R. Dewey is head, something above fifty students have registered. This is an excellent beginning, which testifies to the desirability of a course which will give to the student some inkling of the administrative work of the firms and corporations with which his professional life is likely to be cast. It is not intended, as some have supposed, to teach students how to fill out checks and notes and write letters, but brings to notice the fundamental principles on which engineering business is conducted, dealing even with the larger problems of methods of financing such business.

In the Coöperative School for Health Officers, Professor George C. Whipple notes that the course in rural hygiene has drawn one or two students from the Far West for the reason that no other institution has offered studies in this exceedingly important branch of public health work. With reference to an item widely spread over the country that women are refused admission to the course for health officers, Professor W. T. Sedgwick says that at the beginning it was found that certain of the studies given in the Harvard Medical School are not open to women, but it was quickly arranged that this work might be taken in some other institution, and that with this supplied in some such way women have for a year been eligible to study in the Coöperative School.

Tag Day Helps Athletics

In November a day was set apart as Tag Day by the students, for the purpose of aiding athletics. The Institute Committee appointed a sub-committee to look after the tags, and seventeen hundred were sold. The proceeds amounted to \$201.32, which will be turned over to athletics. Now that the students have had practically the entire athletic burden put on them, they are beginning to realize the seriousness of the matter. The setting apart of an annual tag day is one of the means by which money is to be secured for athletics.

DISCUSSION OF CAMBRIDGE SCHOLARSHIPS

Some wrong impressions Corrected—Executive Committee of the Corporation formulates a general policy

About the middle of September an order was introduced at a meeting of the Cambridge Board of Aldermen, rescinding grants made to the Institute of Technology. It appears that some of the aldermen had understood that Cambridge boys would receive free scholarships and they thought that the Institute had not been awarding scholarships to Cambridge boys as liberally as had been implied by the Institute authorities at the time the street privileges were given the Institute. The matter was taken up by Mayor Good of Cambridge, and the attitude of the board was reported in the Boston and Cambridge newspapers.

As a matter of fact, however, the Institute made no promises to the city of Cambridge when favorable consideration was asked to close the streets, as a *quid pro quo*. President Maclaurin went before the aldermen and explained that the Institute had no intention of coming to Cambridge unless it was welcome. The Institute had received a number of petitions from individuals and societies urging the Institute to settle there. This was backed up by a letter from the mayor who said that he regarded such an institution a blessing and not a burden. The Institute asked for the closing of certain streets at that time, and the order was passed. At the same time the Institute gave the city a parcel of land to widen Vassar street, as well as \$10,000 to be used in extending Ames street to the esplanade.

At this time there was no obligation on the part of the Institute to give special privileges to Cambridge students. President Maclaurin, however, wrote to the mayor and stated that the Institute was prepared to offer certain scholarships to Cambridge boys, and outlined a plan for distributing them, but said that this plan was a tentative one and might be modified in years to come as experience suggested. The President's letter also stated

that the total amount of scholarship assistance would not be definitely fixed, but that the Institute would open as wide an avenue as possible for needy and meritorious students.

Although the establishment of the Institute in Cambridge was far distant, in order to show the citizens of Cambridge its good will, scholarships were made available the next September. The only official statement in regard to these scholarships was contained in the program and catalogue in which it was stated that the number of scholarships to be given to Cambridge students was limited.

In spite of this it is now stated in certain quarters that the Institute had given grounds for the belief that it would give scholarship assistance to all Cambridge students who need it provided they passed its entrance examinations. The impossibility of doing this is easily understood. The result would be that many would register in Cambridge for the sake of obtaining scholarships, although their residence was in some other part of the state. The records of the Institute show that, although it is not yet established in Cambridge, it is giving scholarships to the students in that city more than three times as liberally as to other students.

In order, however, to meet the desires of Cambridge, as far as possible, the Executive Committee of the Corporation discussed the matter and as a result President Maclaurin wrote to Mayor Good on November 10, giving the decision of the Executive Committee of the Corporation, which was in brief as follows:

The original arrangement voluntarily entered into by Technology has frankly been a tentative one subject to modification. The Executive Committee has now formulated a number of rules to be applicable to Cambridge young men about to enter the Institute. These rules are the following:—

1. The scholarships will be awarded to students of either sex about to enter the first year class at the Institute who are graduates of schools in Cambridge and children of legal residents of that city.
2. Applicants must produce evidence satisfactory to the Faculty that they need scholarship aid to enable them to pay the tuition fees at the Institute.
3. The scholarships will be awarded annually on the results of the regular entrance examinations at the Institute held in June of each year. Scholarships will be confined to those students who obtain clear records and reach a standard corresponding in height to that normally required by the Faculty in awarding scholarships to students beyond the first year. The order of merit in the entrance examinations will determine the distribution of scholarships. The maximum number thus granted to students of the first year will be five.

Those to whom scholarships are awarded in the first year will receive scholarships in their second, third and fourth years, provided that they have maintained in the previous year a clear record as high as that normally required by the Faculty in its award of undergraduate scholarships, and that they continue to furnish evidence of need.

4. Those to whom scholarships are awarded on the results of the entrance examinations must enter the Institute at the beginning of the next academic year.
5. Those receiving aid must conform to all the rules of conduct imposed by the Faculty or forfeit their scholarships.
6. The amount of each scholarship will be \$250 and will take the form of remission of tuition fees.
7. Recipients of these Cambridge scholarships who receive State scholarships during the same year will forfeit the Cambridge scholarships to the extent of the aid received from the State.
8. Applications must be made on a form to be obtained from the registrar and filed at his office during the months of

May and June of the year in which the applicant is to enter the Institute.

In transmitting these rules of the Executive Committee, Dr. MacLaurin wrote the following letter to the mayor:—

"I hope that you will see in these rules evidence of the desire of the Institute to be as helpful as possible to the meritorious youth of the city which is to be its future home. The Institute is of course bound by the trusts imposed upon it by those who have given funds for scholarship purposes. The benefit of these funds is commonly confined by the deed of gift to students who are 'needy and meritorious,' and the distribution of the scholarship awards is required to be made 'on the recommendation of the Faculty of the Institute.' In view of the expectation of the Institute that competition will bring to it a considerable number of the best fitted scholars in Cambridge, the Institute is offering scholarship aid as liberally as is indicated in the Rule 3 above.

"Under Rule 3 five scholarships will be given annually to students in the first year if that number reach a satisfactory standard of merit. The students thus aided will receive further assistance in later years if they continue to need aid and keep their records up to the normal standard set by the Faculty for undergraduate scholars. It will appear that under this arrangement the number of individual grants in any year may amount to twenty. Each grant will be \$250, that is, complete remission of tuition fee.

"It should perhaps be added that the Institute must not be understood as entering into an obligation to maintain these scholarships indefinitely. The Corporation can not bind its successors in any way and the arrangement here made must be subject to such modifications as the Corporation in its discretion may later determine.

"I may say in conclusion that in view of the limited funds that the Institute has at its disposal it does not grant any scholarships to those in the first year except to Cambridge students and that the amount of scholarship assistance granted to any individual, however meritorious, rarely exceeds \$125.

"I trust that these facts will serve to emphasize the liberality of the Institute's treatment of students from Cambridge."

(Signed) RICHARD C. MACLAURIN.

After receiving this letter, Mayor Good sent a communication to the board of aldermen in which he said:

"I am in receipt of a letter from President Maclaurin of the Massachusetts Institute of Technology in which he informs me that the Executive Committee of the Corporation has agreed to make provision for five full scholarships each year for Cambridge boys. This means twenty standing scholarships, and I think it shows an intention on the part of the officials of the Institute of Technology to deal liberally with us on this question, which means so much to deserving young men who desire to study at this great institution."

The Rand Memorial Fund

Mention has been made in the REVIEW of a committee formed of members of the classes who were at the Institute during Frank H. Rand's incumbency here as bursar, organized for the purpose of erecting some memorial to him.

A number of professors, graduate students and other friends of Mr. Rand have expressed themselves as being desirous of being represented in this movement, and accordingly the committee has sent out the following letter to members of the Corporation, the Faculty and the alumni who knew Mr. Rand:

As bursar of the Institute of Technology, Frank H. Rand assumed (September, 1902) entire commercial duties and responsibilities. Immediately his interest in the undergraduates and their life became a real factor, and to the men who were students while Mr. Rand was at Tech, he was a friend who effectively and with peculiar personal sympathy helped many over the rougher places. It is not the accomplishments of Mr. Rand, of which we all know, such as the development of the Union and the creation of the "Bursar" Fund, but it is his personal friendliness to us as individuals, his real sympathy with each of us, that stands foremost in our memory of him.

A committee of representatives of the classes of from 1904 to 1913, which was endorsed by the Alumni Council, has considered the matter for several months. The Institute is willing to set aside one of the fireplaces in the chief social hall of the Walker Memorial Building as a Frank H. Rand

Memorial. It is proposed to raise an endowment fund to provide for this fireplace, and the Corporation has expressed its willingness to administer this fund. It seemed most appropriate that this memorial should stand where good-fellowship prevails, as a tribute to one who in the past has added so much to the cheer of just such gatherings.

Inasmuch as Mr. Rand had a large number of warm friends outside of the classes who were at Tech during his administration, it has been suggested that the privilege of being represented in this memorial be extended to members of the Corporation, of the Faculty and to others of the alumni who knew and loved Mr. Rand.

The coöperation which each of us gives in this matter will in many cases be due to the personal appeal which Bursar Rand's memory makes to him. We feel that this personal note will find its most appropriate expression in adding cheer to the living room where the students congregate. Since it is necessary to have an immediate indication of the support which this plan will receive, a subscription blank is enclosed herewith.

Mr. George Wigglesworth and Mr. Francis R. Hart have kindly consented to represent the Faculty, the Corporation and alumni friends of Mr. Rand in connection with the committee below.

H. V. COES, '06, *Chairman*.

HERBERT FRYER, '11, *Secretary*.

E. F. PARKER, '04.

WILLIAM GREEN, '05.

ALEXANDER MACOMBER, '07.

H. B. LUTHER, '08.

B. W. DOW, '09.

H. E. KEBBON, '12.

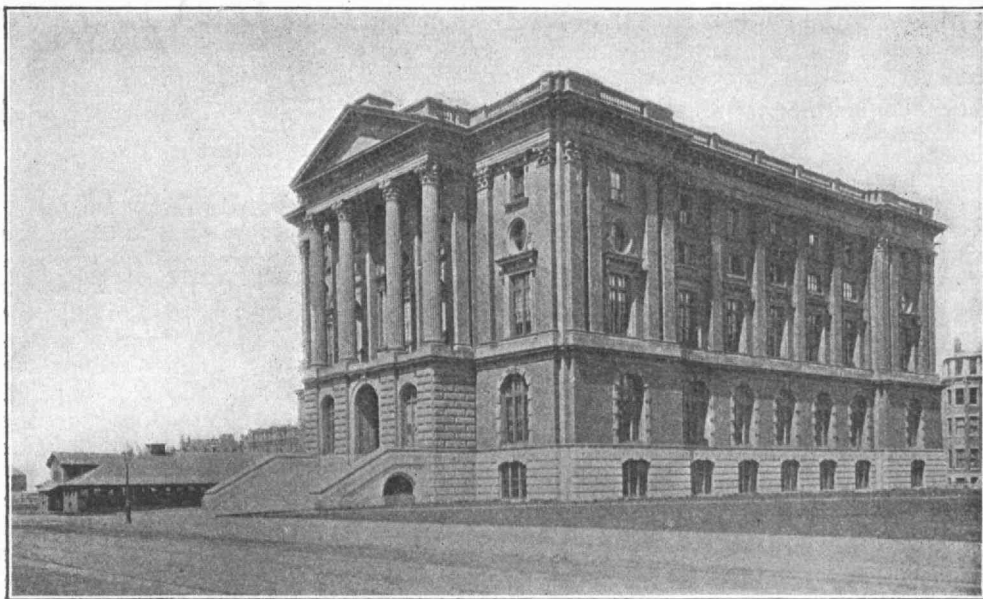
C. E. GREEN, '10.

This letter was sent to a very limited number of men. There may be others who would like to have a part in this memorial, and all such are invited to communicate with Herbert Fryer, secretary of the committee, 35 Federal Street, Boston, Mass.

Prof. Jaggat in Peril

A Honolulu dispatch to the Boston papers told of the escape of Prof. T. A. Jaggat, head of the Hawaiian Volcano Observatory of the Massachusetts Institute of Technology, at the Kilauea Volcano:

Mauna Loa became active November 27, discharging large quantities of molten lava. Prof. Jaggat and his assistants, making an ascent to study the eruption, were caught in a snow storm near the summit and were overwhelmed by snow-slides, while streams of lava were cutting their way down the mountainside. None of the party was seriously injured.



A Picture of Rogers Building taken in the late '70s, showing the gymnasium where the Walker Building now stands

Death of Lucius Tuttle

Lucius Tuttle, former president of the Boston & Maine Railroad and a member of the Corporation of the Institute of Technology, died at his home in Brookline on November 30.

Mr. Tuttle was born in Hartford, Conn., in 1846, and at nineteen years of age became ticket clerk for a railroad running from Hartford to Fishkill, N. Y. Later he became general ticket agent of the line, and in 1878, when the Hartford, Providence & Fishkill became absorbed by the New York and New England, he became its general passenger agent, located in Boston. A little later the Eastern Railroad Company made him their general passenger agent. The stock was then selling at about seven dollars a share, but during his five years' administration the road recovered its standing and resumed dividends. When it consolidated with the Boston & Maine the Eastern was taken in on a par basis. In 1884 Mr. Tuttle joined the Boston & Lowell road, and in 1886 he was made general passenger traffic manager of the

Canadian Pacific Railway at Montreal. In 1889 he became one of the two trunk line commissioners, and in 1890 he gave up this office to become general manager of the New York, New Haven & Hartford; he was made vice-president two years later, and in 1893 was elected president of the Boston & Maine Railroad. After the New York, New Haven & Hartford assumed control of the Boston & Maine system, he resigned from the presidency in September, 1910.

In his will Mr. Tuttle left \$50,000 to the Institute of Technology.

Tech Hockey Dates

With the men working regularly at the gymnasium in preparation for the regular work at the Arena, the Technology hockey team is looking forward to a successful season, which includes the following games: Harvard at the Arena, December 19; Yale at New Haven, January 13; Amherst at Amherst, January 19; Williams at Williamstown, January 30; West Point at West Point, February 3.

PITTSBURGH, FEBRUARY 19 AND 20, 1915

Local committees are appointed and are working like beavers—Good cheer, good comradeship and a hearty welcome await you there

The dates for the annual meeting of the Technology Clubs Associated are Friday and Saturday, February 19 and 20, 1915. The place is to be Pittsburgh, and, although the Pittsburgh association has had but little time to make any arrangements, committees have already been formed and preparations begun to give the visiting delegates a reception that will show them what Pittsburgh hospitality means.

This is the third anniversary of the founding of the associated clubs. The first meeting was held in New York, January 17 and 18, 1913; the second meeting was held in Chicago on February 20 and 21 of this year. The Pittsburgh men had invited the Technology Clubs Associated to meet in that city this year but it seemed more desirable to hold it in Chicago, and, because of the All-Technology reunion, which was to have been held in Boston in 1915, it was expected that the clubs would meet here at that time. When it became apparent that the All-Technology reunion would have to be postponed, Pittsburgh was consulted, and a hearty invitation was extended to entertain the clubs there next February.

The program for the meeting has not yet been fully laid out. In a general way, however, it will be similar in plan to that of the Chicago meeting. In view, however, of general business conditions, it has been felt that it would be more appropriate if the preparations were simple so that the expenses may be reduced, and in this way it is hoped that a larger number of delegates may be attracted to the city.

Among the memorable features of the Chicago reunion were the excursions to large industrial plants. At Pittsburgh the choice of such excursions will be almost unlimited. It is not only the center of the steel industry, but also the bituminous coal and coke industry, the gas industry, the pickle industry, re-

fractory materials, natural gas, and last—and apparently most important on the list sent us by the secretary—rye whiskey. He states, however, that this latter item has nothing whatever to do with the pickles. There are also large manufacturing concerns, the Westinghouse Electric and Manufacturing Company, etc., so that the attractions for the visitor will be diversified and a wide range of choice can be had.

Pittsburgh is centrally situated with reference to Tech men, and it is expected that the turn-out there will be very large and the meeting full of interest. There are several young and enterprising associations in the vicinity, such as Indianapolis and Dayton; while Cincinnati, which has been growing in influence and activity, and the Detroit and Cleveland Associations will undoubtedly send large delegations. Buffalo would naturally contribute a goodly quota, and the same should be true of Rochester.

Arrangements for transportation of the New York and Boston delegates have not yet been made. It is quite possible that the Boston men may go to New York and there take special cars with the New York men, picking up the Philadelphia delegates en route. Chicago ought to send enough delegates to warrant special transportation facilities.

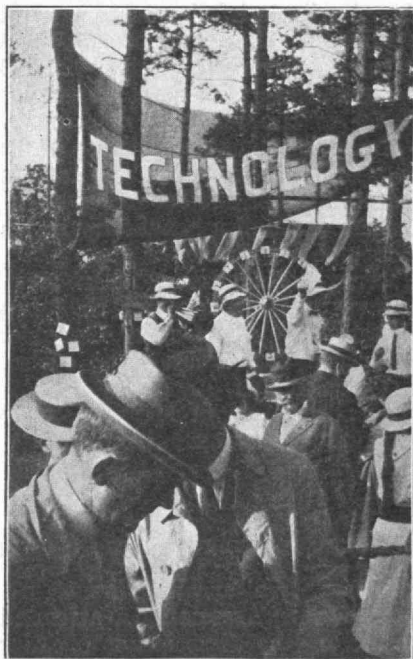
Class boosters will be appointed, and also boosters by the local alumni associations. At the last meeting of the Association of Class Secretaries it was decided to hold a meeting of the secretaries early in January, the principal business of which will be to make plans for booming the Pittsburgh meeting of the Technology Clubs Associated.

The officers of the Technology Clubs Associated are: President, Morris Knowles, '91, Pittsburgh; vice-presidents I. W. Litchfield, '85, Boston, Solomon Sturges, '87, Chicago, F. A. Smythe, '89, Cleve-

land, Benjamin Hurd, '96, New York, L. Yoder, '95, Pittsburgh, F. Dabney, '75, Seattle; secretary, Walter Humphreys, '97, Boston; associate-secretary, Harry A. Rapelye, '08, Pittsburgh.

New Duluth Club Active

The newly formed Technology Club of Lake Superior, with headquarters at Duluth, started actual work almost immediately upon its organization. Last August the Duluth Boat Club invited all college men and women to be their guests and to join in a college-day carnival at a Lake Superior beach near Duluth. Where there were enough representatives of any one college in Duluth, they were assigned a section of the grounds and asked to pull off a stunt.



The Technology aggregation devised a scheme for selling candy that was most successful. They rigged up a wagon wheel with numbers around the rim and then sold numbered cards. The wheel was spun and the holder of the lucky number received a box of choice confec-

tionery. The sale of candy and Tech souvenirs resulted in a hundred and twenty-eight dollars' worth of business. The accompanying snap-shot gives a little idea of the layout. All the Tech men wore white felt hats, decorated with gray and cardinal ribbons.

In the evening a monster bonfire was built on the grounds, and the alumni sang their favorite songs and gave their old-time college yells.

On November 7, the club held its first meeting of the fall season at the Superior Commercial Club room. A social evening was spent after the dinner. The club now has eighteen members, and all were present on that occasion. It was decided that such meetings were good things to cultivate a friendly spirit among Tech alumni. This meeting was held in Superior near Duluth, although only two of the members resided there.

Chinese Students Entertain

A very interesting meeting was recently held at the Technology Union when the Institute Chinese club entertained about sixty Chinese students, ten of whom were girls. The colleges represented by these students were: Technology, Harvard, Boston University, Radcliffe, Wellesley, Dana Hall and Bradford Academy.

H. K. Chow, a mechanical engineering graduate, presided at the meeting and introduced Dean Burton as the first speaker. J. Z. Zee, Course VI, made some clever blackboard caricatures showing the development of Chinese costumes, and depicting how the Chinese women students would look in 1925; M. Chow showed some lantern slides of Boston scenes, some of the Wellesley girls played the piano, and refreshments were served.

Among the ladies present were Misses Tsang, Wong and Soong from Wellesley; Misses Ling and Yang of Dana Hall, Misses Chow, Thaug and Chang of Bradford Academy, and Miss Neu of Radcliffe.

Annual Alumni banquet at the Somerset, Saturday evening, January 9, 1915.

An Exciting Field Day

The annual Field Day exercises of November 6 formally dedicated the wonderful new athletic track which has been constructed beside the new buildings at the Cambridge site. A large number of students, with a sprinkling of alumni, were in attendance and Technology spirit ran high, because the merits of the teams were apparently about even, and both freshmen and sophomores had devoted themselves with vigor to the winning of this event. As a matter of fact the contest was so close that it was literally the last minute of play that the fortunes of the day were decided. It was one of the most exciting contests that has ever been seen in a field day competition; each event was valiantly fought out to the bitter end.

The football game was won by the freshmen by the score of 14 to 6, and was closely contested throughout. The most exciting events were the relay race and the tug-of-war pull. In the relay race the contestants ran almost neck and neck, but as the baton passed from one to the other, the freshmen perhaps gained a slight advantage. When the event was about two-thirds over, however, one of the freshmen waiting to receive the baton got off the mark a little too fast, and his classmate, who was almost exhausted, fell before he could pass the baton. This delay put the freshmen out of the race, and indeed it is a question whether they could have won or not as the sophomores had some very good men in the last third of the event.

The tug-of-war was almost an even break as far as skill and brawn is concerned. The score was in favor of the freshmen, as the football game counts 4 and the relay race 3; so the winning of the tug-of-war was to decide the day. The first pull resulted in a victory for the freshmen; the second was a dead heat; in the third pull the sophomores got down to business and succeeded in pulling the ribbon over to their side of the line by a good margin, winning the heat. A fourth heat was necessary to decide and was fought out with desperation.

The ribbon on the rope swung an inch or two each side of the tape on the ground until toward the last of the period, by mighty heaves, the freshmen gradually carried it safely over to their side.

William Endicott Passes Away

William Endicott, a retired merchant and financier, for many years treasurer of the Corporation and one of the best friends the Institute has ever had, died at his home in Boston, November 8, in his eighty-eighth year.

During his active life he was identified with a large number of business enterprises, mostly banks and railroads. He is survived by a son, William Endicott, Jr., a member of the firm of Kidder, Peabody and Company, who is also a member of the Institute Corporation.

Mr. Endicott left bequests amounting to \$202,000. The sum of \$50,000 was left to the Beverly Hospital; \$25,000 to the Massachusetts General Hospital, and \$25,000 to the Museum of Fine Arts. To the Massachusetts Institute of Technology he left \$25,000. The last three bequests are not subject to payment till after the death of a beneficiary to whom the income is payable for life.

Twenty-five thousand dollars was left to Harvard University for the purpose of establishing the Cancer Commission of Harvard University. The other bequests are smaller.

An appreciation of Mr. Endicott will be found in the next number of the TECHNOLOGY REVIEW.

Secretary Humphreys Read a Paper

Secretary Walter Humphreys, '97, of the Alumni Association, attended a meeting of the Association of Alumni Secretaries in New York last month. The association is composed of the secretaries of various college alumni associations, and was held in the Journalism Building of Columbia University. Mr. Humphreys addressed the secretaries on the subject: "How Our Association Can Best Serve the Alumni Themselves."

FUN AND FROLIC IN CLEVELAND

Annual meeting of the Local Club, at which the new officers were installed—
Overwhelming attendance of royalty

The Technology Club of Northern Ohio held its annual Fall Fun Frolic Saturday, November 7, in Cleveland. The afternoon was spent in attendance at a football game between the Case School of Applied Science and another local college. As Case School is a sister scientific institution, and has four M. I. T. men on her faculty, the boys' sympathies were with the Case team during the game and the M. I. T. cheer and "We are Happy" yell were given with three Cases on the end. The cheering section of the school responded heartily.

In the evening an informal dinner was held at the Athletic Club at which F. A. Smythe, '89, the retiring president, acted as toastmaster. New officials for the year were introduced into office with a very elaborate coronation. A parade entered the dining hall headed by a majestic figure in a black robe, black mask and a black hood, bearing a large-sized hatchet and a sign with the words "Lord High Executioner." Following him came "Four Holy Trumpeters" with elaborate costumes and a various assortment of wind and stringed instruments. Next in line was a gentleman bearing the sign "Boss Politician" and looking the part in every respect, with a silk tile, red necktie, checked vest, Prince Albert coat, curling black moustache, and proverbial cigar. Last, but not least, came the throne chariot, an extraordinary self-propelled "Peerless" vehicle with a real steering wheel, real automobile horn, real license numbers, and a throne supporting a personage magnificently gowned in royal purple and ermine and bearing aloft a banner with the words "Exalted Main Gink."

Assembled in the dining hall the "Lord High Executioner," A. T. Hopkins, '97, announced that his office was a self-appointed one and that his sole duty was to behead the old Gink and crown the

new. He then introduced F. A. Smythe, '89, as the retiring "Exalted Main Gink" and told him that this would be his last opportunity to make a speech before his official head was chopped off. Mr. Smythe arose and bowed amidst tremendous applause and descending from the throne gave one of his characteristic talks which the boys of Northern Ohio have learned to look forward to with no small amount of delight because of the combined humor and loyalty to Technology and her interests.

At the close of Mr. Smythe's speech the "Holy Trumpeters"—Charlie Haynes, '04, Allen Gould, '10, Tyler Carlisle, '10, and Allen Spicer, '13—blew a grand fan-fare and the Royal Chopping Block was brought in. The retiring Gink kneeled and placed his head upon the same, and the Executioner, pronouncing a benediction over the body, and tying a butcher's apron around his own waist, proceeded to strike off the royal crown of office. Following this action the robes of purple were stripped from the Ex-Gink, and, amidst a new round of applause, P. W. Litchfield, '96, was robed, crowned, and introduced as the new "Exalted Main Gink." Mr. Litchfield replied with a clever speech of acceptance of the office during the course of which he appointed a Court Entertainment Committee who were all duly initiated into the sacred and secret order of the "Little Yellow Dog" much to the amusement of the audience. At the conclusion of Mr. Litchfield's speech he ascended the throne, and Mr. Smythe announced that he wished to offer the new Gink the Court Loving Cup, which was accordingly produced from under the throne and presented to the new executive.

Frederick Metcalf, '90, was then announced by the "Lord High Executioner" as the newly elected "Revered Vice Gink" and following his introduction the

"Boss Politician" was called upon to explain the qualifications of the various executives which had led them to become nominated for office. Bob Wallace, one of the noisy '98 crowd, carried through this part of the program very successfully and humorously, and after explaining how he had spent his money and influence in getting the Machine to put the new men into office, he offered a sincere tribute to the work and leadership of the retiring president of the organization, F. A. Smythe, which tribute was heartily echoed by every member present. The names of the men elected to the Board of Directors, which became known as the "Holy Circle," were called and each responded as his name was announced. The men are the following: F. A. Smythe, '89, A. T. Hopkins, '97, H. B. Dates, '94, G. T. Glover, '08, G. W. Sherman, '94, G. E. Merryweather, '96, E. R. Hall, '08, T. W. Carlisle, '10, A. D. Hatfield, '96, A. A. Gould, '10.

The "Lord High Executioner" brought the coronation to a close by calling upon the "Purveyor of Harmony," Charlie Haynes, '04, to play the court anthem and all joined in singing the Stein Song with all the vigor which the men in this organization are noted for.

The balance of the evening was spent on the club bowling alleys and the team led by Luther Roby, '75, known as the "Drys," defeated the "Wets" led by W. R. Strickland, '98, by a close margin.

Among those present were the following: G. W. Bowers, '09, K. Whitman, '05, R. H. Danforth, '98, M. P. Potter, '00, Stanley Motch, '99, E. R. Motch, '97, E. R. Hall, '08, A. W. Huse, '98, A. M. Eicher, '12, R. B. Wallace, '98, W. R. Strickland, '98, C. W. Brown, '99, C. P. Kerr, '11, Wm. B. Jenkins, '09, C. P. Monto, '10, H. B. Pushee, '11, H. B. Dates, '94, A. L. Patrick, '94, H. S. Alexander, '11, R. W. Ferris, '08, W. W. Sanders, '00, R. A. D. Preston, '10, G. E. Merryweather, '96, C. R. Haynes, '04, A. A. Gould, '10, R. B. Fay, '05, K. W. Reed, '13, L. A. Roby, '75, Wm. S. Wolfe, '12, W. P. Keith, '14, F. A. Smythe, '89, Frederick Metcalf, '90, Don Stevens, '11, A. T. Hopkins, '97, R. T. Haslam, '11,

R. G. Hubby, '94, F. E. Dixon, '06, W. A. Snow, '14, J. H. Dunlap, '11, K. B. Kilborn, '11, J. E. Hale, '08, T. W. Carlisle, '10, F. R. Peabody, '96, Allen Spicer, '13, A. D. Hatfield, '93, K. W. Gasche, '10 & '13, W. H. Lambirth, '96, W. J. Sweetser, '01, H. C. Mabbott, '12, P. W. Litchfield, '96, R. W. Pratt, '98, C. E. Stamp, '96, C. M. Allen, '02.

The membership of this organization has now reached 150. All new men who are located in Cleveland are earnestly urged to communicate with headquarters at once so that they may be included in the fun and fellowship which this organization enjoys.—*Don Stevens, '11, Sacred Scribe.*

Many Addresses Wanted

There has recently been sent out to former students of the Institute a list of graduates, special students and students of the School of Mechanic Arts, for whom the alumni office has no addresses. This list comprises between fifteen hundred and two thousand names, and a request is made that our friends will go over this list and send to the alumni office all addresses that they may happen to know. It is our hope that the number of men whose addresses are unknown, will be reduced by at least one-half. The alumni office and its precursor in establishing the present system of alumni records, the Income Fund Committee, has now been at work about ten years. As a result our records are probably as accurate as those of any other college. It is the desire of the association to keep in touch with every former student, and your coöperation is solicited to this end.

Alumni Dinner, January 9

Notice is hereby given that January 9 is reserved for the annual Alumni Association dinner. Full plans for the event have not yet been settled upon, but notice will be sent out as usual the latter part of December. Please bear the date in mind, however, and reserve it for this purpose.



The "89 Centurion" thus depicts a stormy conference between the committees on supplies and fire protection. Fortunately the differences were speedily adjusted and the session closed with song. The editor also notes that Frank Hart's barn was all right after all—it was a false alarm.

Track and Cross-Country

In a dual meet between Technology and Holy Cross on November 5, Technology easily won, with a score of 81 to 21. The meet was held at Fitton field, Worcester.

In what was perhaps the closest race ever seen in a New England intercollegiate cross-country run, the University of Maine took first place November 13, at the meet that ended at Franklin field, Boston, just getting an edge on Technology by the score of 66 to 69. Dartmouth was third with 74 points; Massachusetts Agricultural, Williams, Colby, Brown, Worcester Polytechnic and Amherst followed in the order given. The Technology team was a well-balanced one, finishing the fifth man in the twentieth place. Maine, however, had a wonderful try-out of fast runners and was entitled to win.

In the intercollegiate cross-country run which was held at New Haven, Saturday, November 21, Cornell won with a score of 35; Harvard was second with 77 points, giving her a wide margin over Yale, which was third with 91 points; Technology was fourth with 113 points, and the University of Pennsylvania, Princeton,

Colby, Dartmouth, Brown, Columbia and the College of the City of New York followed in the order named.

The course was one of the hardest over which the intercollegiates have been run during recent years, consisting principally of fields and newly-built roads which were very soft. The sun was warm enough to take out the frost and make the course wet and muddy the greater part of the way.

New York Tech Dinner

The annual New York all-Technology dinner will be held at the club house, 17 Gramercy Park, on January 30, 1915. The program of the dinner will be a departure from the usual custom, and it is bound to be an attractive one. This is not a club but an all-Technology affair, and great preparations are being made to entertain a very large number of guests.

During the last month the Institute has received bequests amounting to \$275,000; \$200,000 from Caroline French, \$25,000 from William Endicott and \$50,000 from Lucius Tuttle.

OFFICERS OF LOCAL ALUMNI ASSOCIATIONS

Partial list of the Governing Boards of Technology Clubs—Several hundred alumni are interested indirectly in running these Clubs

Following is a list of the officers of the local alumni associations, and of the Technology Clubs Associated:

Technology Clubs Associated: president, Morris Knowles, '91; vice-presidents, Frank Dabney, '75, I. W. Litchfield, '85, Solomon Sturges, '87, Frank A. Smythe, '89, I. K. Yoder, '95, Benjamin Hurd, '96; secretary-treasurer, Walter Humphreys, '97; associate secretary, Harry A. Rapelye, '08.

Albany—Technology Club of Albany, New York: president, Theodore Horton, '94; secretary-treasurer, Russell Suter, '00.

Atlanta—Atlanta Association of M. I. T.: president, C. A. Smith, '99; secretary, H. M. Keys, '99.

Birmingham—Southeastern Technology Association: president, E. C. Wells, '92; secretary, A. F. Mohan, '08; Alumni Council representative, H. S. Mork, '99.

Boston—Technology Club of Boston: president, Carroll W. Doten; vice-president, Dwight Porter; secretary, Robert S. Williams, '02; treasurer, Andrew A. MacLachlan, '96.

Bridgeport—Technology Club of Bridgeport: president, George Mac. MacDonald, '03; treasurer, H. R. Philbrick, '06; secretary, Wilbur A. Swain, '15.

Buffalo—Technology Club of Buffalo, New York: president, N. K. B. Patch, '02; secretary, H. M. Cowper, '05; treasurer, Carl Houck, '05; Alumni Council representative, M. S. Sherrill '99.

Butte—Technology Club of Montana: president, Charles W. Goodale, '75; vice-president, Ralph Hayden, '96; secretary-treasurer, C. D. Demond, '93.

Chicago—Northwestern Association of the M. I. T.: president, Solomon Sturges, '87; vice-president, Kenneth Lockett, '02; secretary-treasurer, George B. Jones, '05; Alumni Council representative, B. R. T. Collins, '88.

Cincinnati—Cincinnati M. I. T. Club: president, Stanley A. Hooker, '97; vice-president, Herman W. Lackman, '05; secretary, Stuart R. Miller, '07; treasurer, Robert Andrews, '01; Alumni Council representative, C. L. Homer, '04.

Cleveland—Technology Club of Northern Ohio: president, Paul W. Litchfield, '96; vice-president, Frederick Metcalf, '90; secretary-treasurer, Donald R. Stevens, '11; Alumni Council representative, G. R. Wadsworth, '98.

Dayton—Dayton Technology Association: president, Walter G. Wuichet, '89; vice-president, Henry M. Waite, '90; secretary-treasurer, Edward C. Wells, '92.

Denver—Rocky Mountain Technology Club: president, George D. Luther, '07; vice-president, H. O. Bosworth, '02; secretary, Marden W. Hayward, '06; Alumni Council representative, Allen H. Rogers, '90.

Detroit—Detroit Technology Association: secretary, Preston M. Smith, '05; Alumni Council representative, Everett Morss, '85.

Duluth—Technology Club of Lake Superior: president, Samuel B. Sheldon, '89; vice-president, Walter G. Zimmermann, '98; secretary, Floyd M. Fuller, '06.

Hartford—Technology Club of Hartford: president, J. H. Fellows, '06; vice-president, H. E. Dart, '01; secretary-treasurer, George W. Baker, '92; Alumni Council representative, R. A. Wentworth, '04.

Hawaii—Technology Club of Hawaii: president, Jacob F. Brown, '78; secretary, Norman Watkins, '98; Alumni Council representative, A. M. Hamblet, '02.

Indianapolis—Indiana Association M. I. T.: president, J. Lloyd Wayne, 3d, '96; vice-president, W. G. Wall, '96; secretary, Wilson B. Parker, '88.

Japan—Technology Association of Japan: secretary-treasurer, Takuma Dan,

'78; Alumni Council representative, H. W. Smith, '97.

Kansas City—Southwestern Association of M. I. T.: president, G. M. Holbrook, '00; vice-president, Frank Cushman, Jr., '01; secretary-treasurer, Hermann C. Henrici, '06; Alumni Council representative, H. C. Turner, '03.

Lawrence-Lowell—Technology Club of the Merrimack Valley: president, George W. Hamblett, '88; vice-president, Charles H. Eames, '97; secretary, John A. Collins, Jr., '97; treasurer, William O. Hildreth, '87; Alumni Council representative, R. A. Hale, '77.

Los Angeles—Technology Club of Southern California: president, Edward L. Mayberry, '06; vice-president, Edward Johnson, '99; secretary-treasurer, Robert S. Breyer, '10; Alumni Council representative, John C. Chase, '74.

Manchester—Technology Club of New Hampshire: president, Edward W. Rollins, '71; vice-president, Norwin S. Bean, '94; secretary-treasurer, Walter D. Davol, '06; Alumni Council representative, Andrew Fisher, Jr., '05.

Manila—Technology Club of the Far East: secretary, William A. Adams, '08.

Milwaukee—Technology Club of Milwaukee: secretary, Mitchell Mackie, '05; Alumni Council representative, Alexander Macomber, '07.

Minneapolis—Technology Association of Minnesota: president, W. H. Bovey, '94; vice-president, G. H. Goodell, '92; secretary, DeW. C. Ruff, '07; treasurer, Mark G. Magnuson, '04; Alumni Council representative, M. C. Brush, '01.

Montreal—Technology Club of Lower Canada: president, D. J. Spence, '00; vice-president, H. O. Heay, '00; secretary-treasurer, E. B. Evans, '06; Alumni Council representative, George W. Vailant, '92.

New Bedford—Technology Club of New Bedford, Mass.: president, Benjamin C. Tripp, '97; secretary-treasurer, Richard D. Chase, '92; Alumni Council representative, C. F. Lawton, '77.

New Orleans—Technology Club of the South: president, Allison Owen, '94; vice-president, Walter G. Zimmerman, '98; secretary-treasurer, Francis W. Cross-

by, '90; Alumni Council representative, C. W. Taintor, '93.

New York—Technology Club of New York: president, Walter Large, '78; vice-president, George V. Wendell, '92; treasurer, Ira Abbott, '81; secretary, Frank C. Schmitz, '95; Alumni Council representative, Ralph H. Howes, '03.

Philadelphia—Technology Club of Philadelphia: president, Richard Waterman, '92; vice-president, C. F. Willard, '01; secretary-treasurer, George C. Lees, '08; Alumni Council representative, Leonard C. Wason, '91.

Pittsburgh—Pittsburgh Association M. I. T.: president, William E. Mott, '89; vice-president, Luther K. Yoder, '95; secretary-treasurer, H. A. Rapelye, '08; Alumni Council representative, Sumner B. Ely, '92.

Pittsfield—Technology Club of Pittsfield: president, E. A. Jones, '87; Alumni Council representative, Walter B. Snow, '82.

Portland—Technology Association of Oregon: president, Hudson B. Hastings, '07; secretary-treasurer, Robert E. Cushman, '06; Alumni Council representative, A. D. MacLachlan, '96.

Providence—Technology Club of Rhode Island: president, William C. Dart, '91; vice-president, Z. W. Bliss, '89; secretary-treasurer, Clarence L. Hussey, '08; Alumni Council representative, E. B. Homer, '85.

Rochester—Technology Club of Rochester: president, William E. Hoyt, '68; first vice-president, Frank W. Lovejoy, '94; second vice-president, Allen S. Crocker, '97; secretary-treasurer, John F. Ancona, '03; Alumni Council representative, C. A. Sawyer, '02.

St. Louis—St. Louis Society of the M. I. T.: chairman, John L. Mauran, '89; secretary-treasurer, Amasa M. Holcombe, '04; Alumni Council representative, Charles M. Spofford, '93.

Salt Lake City—Intermountain Technology Association: president, C. S. McDonald, '99; first vice-president, G. S. Humphrey, '10; second vice-president, V. S. Rood, '07; secretary-treasurer, Owen H. Gray, '97; Alumni Council representative, R. B. Pendergast, '04.

San Francisco—Technology Association of Northern California: president, E. A. Hersam, '91; secretary-treasurer Herbert D. McKibben, '06; Alumni Council representative, Burton G. Philbrick, '03.

Seattle—Technology Club of Puget Sound: president, Quincy P. Emery, '07; vice-president, Walter A. Gleason, '97; secretary, Joseph Daniels, '05; Alumni Council representative, Don Galusha, '04.

Spokane—Inland Empire Association of the M. I. T.: president, Shirley S. Philbrick, '98; vice-president, William J. Roberts, '91; secretary, Philip F. Kennedy, '07; Alumni Council representative, H. W. Gardner, '94.

Springfield—Technology Association of the Connecticut Valley: president, Edmund P. Marsh, '89; secretary-treasurer, Ernest W. Pelton, '03; Alumni Council representative, Eben S. Stevens, '68.

Steelton—Technology Club of Central Pennsylvania: president, R. V. Mackay, '06; secretary, E. L. Chapman, '01.

Syracuse—M. I. T. Club of Central New York: president, David D. Mohler, '03; vice-president, Edwin W. Bonta, '07; secretary-treasurer, Harry N. Burhans, '07; Alumni Council representative, Irving S. Merrell, '96.

Urbana—Tech Club of the University of Illinois: president, E. W. Washburn, '05; treasurer, A. B. M. Corrubia, '13; secretary, Harold E. Babbitt, '11.

Washington—Washington Society of the M. I. T.: president, Parker V. Dodge, '07; vice-president, William H. Bixby, '70; treasurer, F. Charles Starr, '05; Alumni Council representative, Henry Morss, '93.

Worcester—Technology Association of Worcester County: president, Albert S. Heywood, '92; vice-president, Frank E. Davis, '83; secretary-treasurer, Louis E. Vaughan, '02.

being entertained last year, that the Institute took up the matter, and this year the reception was given by the President and Faculty, to which friends of the Institute were also invited, about three hundred graduate students of other colleges attending. A brief address was given on "Industrial Revolution" by Dr. William Cunningham, F.B.A., of Trinity College, England. Professor William T. Sedgwick spoke briefly in behalf of the Faculty, comparing educational opportunities in this country with those of a century ago; and Jasper Whiting, '89, president of the M. I. T. Alumni Association, gave a welcome to the students. All formality of dress and program was discarded, even the conventional receiving line was omitted.

Annual Meeting of Class Secretaries

The annual meeting of the Association of Class Secretaries was held at the Technology Club, Boston, November 27.

The officers elected were: F. H. Fay, '93, secretary, and I. W. Litchfield, '85, assistant secretary.

The meeting was entirely informal. The topics for discussion were: How the secretaries can boom the meeting of the Technology Clubs Associated in Pittsburgh, February 19-20; methods of collecting dues; class dinners, outings, etc. There was a general comparison of notes between the secretaries in regard to the above matters.

It was voted to hold another meeting of the association the first week in January to help increase the attendance at the Alumni Association dinner, January 9, and to take steps to thoroughly advertise the meeting of the Technology Clubs Associated.

Wrestling at Tech

The Tech wrestling team has reorganized for the season, and on November 28 defeated the Beverly Y. M. C. A. five out of eight bouts.

The program for the coming season is an interesting one. The Tech wrestling team has not been defeated for two years.

Reception to College Men

For a number of years past the graduate students of other colleges entering the Institute have been given a reception at the Technology Club by the Walker Club of the Institute. This function has become so large, over two hundred men

Upper-Class Men as Advisers

An innovation very helpful for the freshmen was inaugurated at the Institute this fall through the enterprise of the Technology Christian Association. Nearly a hundred students, members of

The work was carried on in a systematic, efficient way, and was thoroughly appreciated by the freshmen. Hint of the enterprise of the T. C. A. is given in the reproduction of the posters published herewith. These pictures were done in color by one of the members of the organization and were far more effective than they appear here.



the association, volunteered to give their assistance to entering freshmen. John Homan, '15, was in charge of the work, and the volunteers were appointed advisers to the new men as soon as the Dean, who heartily seconded the project, could make the proper assignments.

Dean Burton advised in regard to the selection of the advisers and cooperated with the committee. The freshmen met the upper-class advisers in time to get useful help during the registration period.

Headquarters of the T. C. A. were maintained in Rogers corridor during the opening days for the purpose of giving information, assisting in bringing together freshmen and advisers, and assisting at registration. A rooming and boarding list, which had been carefully investigated, was printed and handed to all those looking for rooms.

Red Flags Barred

A law was recently passed in Massachusetts prohibiting the carrying of red banners in parades. Soon after the law went into effect it was hinted by some members of the Socialist party that the law applied equally to colleges like Harvard and that there were liable to be prosecutions if the Harvard flag was carried in parades. The Institute flag, having a red ground, was also tabooed. When Harvard marched to the stadium for the Princeton game and when the Tech cohorts marched to their new field in Cambridge on Field Day no red banners were carried. In the Harvard parade was a white banner with a black H, and in the Tech parade was a gray banner with a red T. It is understood that the law will be modified so that colleges can carry their flags in parades.



THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Boston, Mass.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY aims to give thorough instruction in *Civil, Mechanical, Chemical, Mining, Electrical, and Sanitary Engineering; in Chemistry, Electrochemistry, Architecture, Physics, Biology and Public Health, Geology, and Naval Architecture.*

To be admitted to the Institute, the applicant must have attained the age of seventeen years and must pass examinations in algebra, plane and solid geometry, physics, history of the United States (or ancient history), English, French and German. Preparation in some one of a series of elective subjects is also required. A division of these examinations between different examination periods is allowed. In general, a faithful student who has passed creditably through a good high school, having two years' study of French and German, should be able to pass the Institute examinations.

Graduates of colleges, and in general all applicants presenting certificates representing work done at other colleges, are excused from the usual entrance examinations and from any subjects already satisfactorily completed. Records of the College Entrance Examination Board, which holds examinations at many points throughout the country and in Europe, are also accepted for admission to the Institute.

Instruction is given by means of lectures and recitations, in connection with appropriate work in the laboratory, drawing-room or field. To this end extensive laboratories of chemistry, physics, biology, mining, mechanical engineering, applied mechanics, and the mechanic arts, have been thoroughly equipped, and unusual opportunities for field-work and for the examination of existing structures and industries have been secured. So far as is practicable, instruction is given personally to small sections rather than by lectures to large bodies of students.

The regular courses are of four years' duration, and lead to the degree of Bachelor of Science. In most courses the work may also be distributed over five years by students who prefer to do so. Special students are admitted to work for which they are qualified; and the degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering are given for resident study subsequent to graduation. Opportunity for research is offered in all the departmental laboratories, in the three recently established Research Laboratories of Applied Chemistry and Physical Chemistry, and in the Sanitary Research Laboratory and Sewage Experiment Station.

The tuition fee, not including breakage in the laboratories, is \$250 a year. In addition, \$30 to \$35 per year is required for books and drawing materials.

For catalogues and information, address

ALLYNE L. MERRILL, *Secretary of the Faculty,*

491 Boylston Street, Boston.

THE
ASSOCIATED GEOLOGICAL
ENGINEERS

FREDERICK G. CLAPP, '01; MYRON L. FULLER, '96
331 FOURTH AVENUE, 131 STATE STREET,
PITTSBURG, PA. BOSTON, MASS.

Examinations and reports on oil, gas and mineral
properties, water supplies, bridge and dam foundations,
cement and building stones; mining and treatment of
ores.

Main 5571 TELEPHONES Main 5572

CHARLES H. JOHNSON, '05

Representing

NEW ENGLAND MUTUAL
LIFE INSURANCE COMPANY
Of Boston, Massachusetts

Oldest Chartered Company in America. Obtain our
figures FIRST and not afterward.

176 FEDERAL STREET, BOSTON, MASS.

LORD ELECTRIC CO.

(Electric Contracting)

LORD CONSTRUCTION CO.

(Complete Mechanical Equipments)

LORD MFG. CO.

(Electric Railroad Specialties)

BOSTON (F. W. Lord, '93) NEW YORK

ROBERT H. RICHARDS

ORE DRESSING

Makes careful concentrating tests for design of
flow sheets for different ores.

491 Boylston St. :: Boston, Mass.

FRANK P. MONTGOMERY

GENERAL INSURANCE

Consulting Engineer

Fire Prevention
Fire Protection

Automatic Sprinklers
Schedule Rating

M. I. T. '02

93-95 NASSAU STREET
NEW YORK

15 CLINTON STREET
NEWARK, N. J.

EVERETT N. CURTIS, '98

ATTORNEY & COUNSELLOR AT LAW

Patent, Trade-Mark, and Copyright
Practice and Litigation

ROOMS 509-512, 84 STATE STREET
BOSTON

EDWARD A. BUSS

MILL ARCHITECT AND
CONSULTING ENGINEER

85 WATER STREET - BOSTON, MASS.

New Construction
Rearrangements

Electrical Equipment
Economy of Operation

CHEMISTS

SAUNDERS & FRANKLIN

Providence, R. I.

OFFICIAL CHEMISTS:

The New England Foundrymen's Association



Trade Mark Reg. U.S. Pat. Off.

Samson Solid Braided Cord

All Kinds, Sizes and Colors

Cotton, Linen, Italian Hemp

Samson Spot Cord. Extra quality guaranteed. We are glad to send samples
and full information.



Trade Mark Reg. U. S. Pat. Off.

Samson Cordage Works, Boston, Mass.

James P. Tolman, '68, *President*
Herbert G. Pratt, '85, *Treasurer*

ARTHUR D. LITTLE, Inc.

Laboratory of Engineering Chemistry

93 Broad Street,



Boston

A. D. LITTLE, '85, President

H. J. SKINNER, '99, Vice-President

H. S. MORK, '99, Treasurer

C. F. WOODS, Secretary

The purpose of this organization of **CHEMISTS** and **ENGINEERS** is that of securing to its clients **INCREASED INDUSTRIAL EFFICIENCY** in material and processes :: :: :: :: ::

In addition to its general service covering Inspection, Analyses, Physical and Electrical Tests, and Technical Reports, the laboratory is prepared, through its large staff of specialists, to undertake any work involving the application of chemistry to industry.

NO WINTRY BLASTS

can penetrate the atmosphere of those buildings heated by

Webster Vacuum Systems

They maintain a uniform temperature no matter how severe the weather. The Modulation Valve on each radiator provides that flexibility necessary to an ideal heating system.

A Webster System will stretch your coal pile by saving much of the fuel wasted by less accurately controlled systems. It pays for itself by its own economies.

NEW ILLUSTRATED CATALOG ON REQUEST

Warren Webster & Company

AIR WASHERS

Established 1888

CAMDEN, N. J.

STEAM SPECIALTIES

Over 7000 Installations

OFFICES IN ALL PRINCIPAL CITIES

New England Manager, WILLIAM G. SNOW, '88

24 Milk Street, Boston

(26-142)



TRADE MARK.
REGISTERED.

NEW ENGLAND FELT ROOFING WORKS

101 MILK STREET, BOSTON.

TEL. 1496 MAIN

ESTABLISHED 1852

INCORPORATED 1891

"BEEHIVE" BRAND FELT ROOFING AND WATERPROOFING MATERIALS

¶ The Standard Specification in New England for 60 years. Quality, Quantity and skilled application has given gravel roofing its present reputation with architects and property owners. More than 400,000,000 square feet now in use. Insured in all leading insurance companies in the United States and abroad at same rate as Metal and Slate. Our testimonials cover roofs 35 years old still in good condition.

¶ STANDARD SPECIFICATION:

- | | | | | |
|---|---|---|---|---|
| 1 | { | 1st. One layer "Beehive" Brand Rosin Sized Dry Paper. | } | 1 |
| | | 2d. Three layers "Beehive" Brand Roofing Felt. | | |
| | | 3d. Mopping "Beehive" Brand Roofing Composition (of not less than three gallons per square 10 x 10). | | |
| 2 | { | 4th. One layer "Beehive" Brand Roofing Felt. | } | 2 |
| | | 5th. Mopping "Beehive" Brand Roofing Composition (of not less than three gallons per square 10 x 10). | | |
| 3 | { | 6th. One layer "Beehive" Brand Roofing Felt. | } | 3 |
| | | 7th. Pouring "Beehive" Brand Roofing Composition (8 gallons to square 10 x 10, into which is to be bedded clean, dry gravel or slag). | | |

NOTE.—In writing specification, it is advisable to write in full,
"Beehive Brand" Roofing Material, Manufactured
by the New England Felt Roofing Works.

¶ Three Section Roofing Specification.

Each Section complete in itself.

Open work, easy inspection and detection of oversights in application.

Cambridge Subway all waterproofed with "Beehive" Materials, and used largely in Boston Subways and Water Front Cellars.

Felt Manufactured by the

MUNROE FELT & PAPER CO., Lawrence.

JAMES P. MUNROE, '82. Pres. and Treas.



STONE & WEBSTER

CHARLES A. STONE, '88 EDWIN S. WEBSTER, '88 RUSSELL ROBB, '88 HENRY G. BRADLEE, '91
ELIOT WADSWORTH DWIGHT P. ROBINSON, '92 JOHN W. HALLOWELL

STONE & WEBSTER-SECURITIES DEPARTMENT SECURITIES OF PUBLIC SERVICE CORPORATIONS

STONE & WEBSTER ENGINEERING CORPORATION CONSTRUCTING ENGINEERS

Water Power Developments Transmission Lines Steam Power Stations
Gas Plants Electric Railways Industrial Plants and Buildings

STONE & WEBSTER MANAGEMENT ASSOCIATION (INCORPORATED)

GENERAL MANAGERS PUBLIC SERVICE CORPORATIONS

Street Railways Interurban Railways Electric Light Companies
Power Companies Gas Companies

NEW YORK

BOSTON

CHICAGO



OTHER TECH MEN

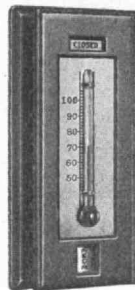
who hold responsible positions as purchasing agents for
large companies always buy



for the men in their shops. They know by experience
that the accuracy of these tools insures perfect work,
while their excellence of design increases the efficiency
of the men. When you need fine mechanical tools for
yourself or for your plant consult the Starrett Catalog
No. 20.

The L. S. Starrett Co.
ATHOL, MASS.

Johnson Model Thermostat



only four and three-quarter inches long, two inches wide and one inch deep, from the design of one of the greatest architects in the country, with the "Open and Closed" INDICATOR to show when the heat is turned "On" or "Off" and a POSITIVE SHUT-OFF for fresh air sleeping rooms. It is the final touch to an ideal heating system.

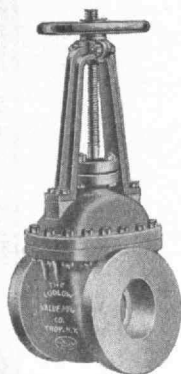
OFFICE STYLE
WITH INDICATOR
AND SHUT-OFF

Write for Booklet.

Johnson Service Company
MILWAUKEE, WISCONSIN

NOTICE—We are the owners of Patent No. 924,235 relating to the automatic control of humidity. Infringers and unlicensed users will be prosecuted.

LUDLOW GATE VALVES FOR



**HIGH STEAM
PRESSURE**

**THEY ARE
RELIABLE
Specify Them**

*Also for water, oil, gas,
ammonia*

**FIRE HYDRANTS
SLUICE GATES**

The Ludlow Valve Mfg. Co.

TROY, N. Y.

Boston Office, Oliver Bldg.

**CHICAGO NEW YORK PITTSBURG
KANSAS CITY PHILADELPHIA**

5 FOR YOUR DEN 5 BEAUTIFUL COLLEGE PENNANTS

YALE and HARVARD,
Each 9 in. x 24 in.
**PRINCETON, CORNELL,
MICHIGAN**
Each 7 in. x 21 in.

4—PENNANTS, Size 12x30—4
Any Leading Colleges of
Your Selection

All of our best quality, in their proper colors, with colored emblems.

Either assortment, for limited time, sent postpaid for 50 cents and five stamps to cover shipping costs.

Write us for prices before placing orders for felt novelties of all kinds.

The Gem City Novelty Co.
4014 Bittner Street
Dayton, Ohio



SANITAS MANUFACTURING CO.

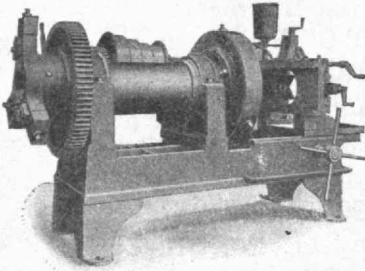
MANUFACTURERS OF
FINE PLUMBING FIXTURES

52-54 UNION ST.,
BOSTON

WORKS AT
WAKEFIELD, MASS.

38-40 WEST 32nd ST.
NEW YORK

WALLACE C. BRACKETT, '95, GEN. MGR.



Pipe Cutting and Threading Machinery

THE COX & SONS CO.

PHILADELPHIA OFFICE
519-520 Lafayette Bldg.

MAIN OFFICE AND WORKS
Bridgeton, N. J.

OPPORTUNITY to purchase a long established, profitable, mechanical manufacturing business, employing over one hundred men, generally steadily engaged, and having excellent selling connections at home and abroad. Fulllest investigation given and required. Present owner retiring. If interested, address: **W. T. H., care of The Technology Review.** ∴ ∴

